

Bulk Fine Particle Composition Measured at T1

Chris Hennigan, Amy Sullivan, Arsineh Hecobiannajjari, Rick Peltier, Rodney Weber,
Greg Huey

Rodney Weber, rweber@eas.gatech.edu

As part of a large suite of instrumentation deployed at T1 from the Georgia Tech trailer, semi-continuous measurements were made of PM_{2.5} aerosol mass and bulk chemical composition, including TEOM mass, Sunset Labs OCEC, PILS-IC of sodium, ammonium, calcium, magnesium, chloride, sulfate, nitrite, and nitrate, and PILS-TOC measurements of water-soluble OC (WSOC). Two meteorological and aerosol chemical regimes occurred during the March 2006 experiment. March 1 to 24 was characterized by dry conditions with high mineral dust loadings. During this period reconstructed chemical mass greatly under-predicted TEOM PM_{2.5} likely due to unmeasured mineral dust chemical components. March 24 to March 31 was wet with less mineral dust and reconstructed mass was in good agreement with PM_{2.5} mass. During the wetter phase of the experiment much higher concentrations of chloride, nitrate and ammonium were observed, while sulfate concentrations were only slightly higher. Curiously, the organic carbon fraction was only slightly higher during the dry period, but OC/EC ratios were similar, suggesting that on average the sources for carbonaceous aerosol during the two periods was similar. WSOC was also very similar during the two periods, indicating that ambient RH may have had little influence on WSOC production (assuming minor influences from biomass burning). Further analysis is required.